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Koszela

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(54) **STRING CLEANING DEVICE AND METHOD**

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(51) **Int. Cl.**
G10D 1/12 (2006.01)

(52) **U.S. Cl.** ..... **84/287 R**; 15/220.4

(58) **Field of Classification Search** ..... 84/297 R; D32/35, 40; D4/120; 15/220.4, 88
See application file for complete search history.

(56) **References Cited**

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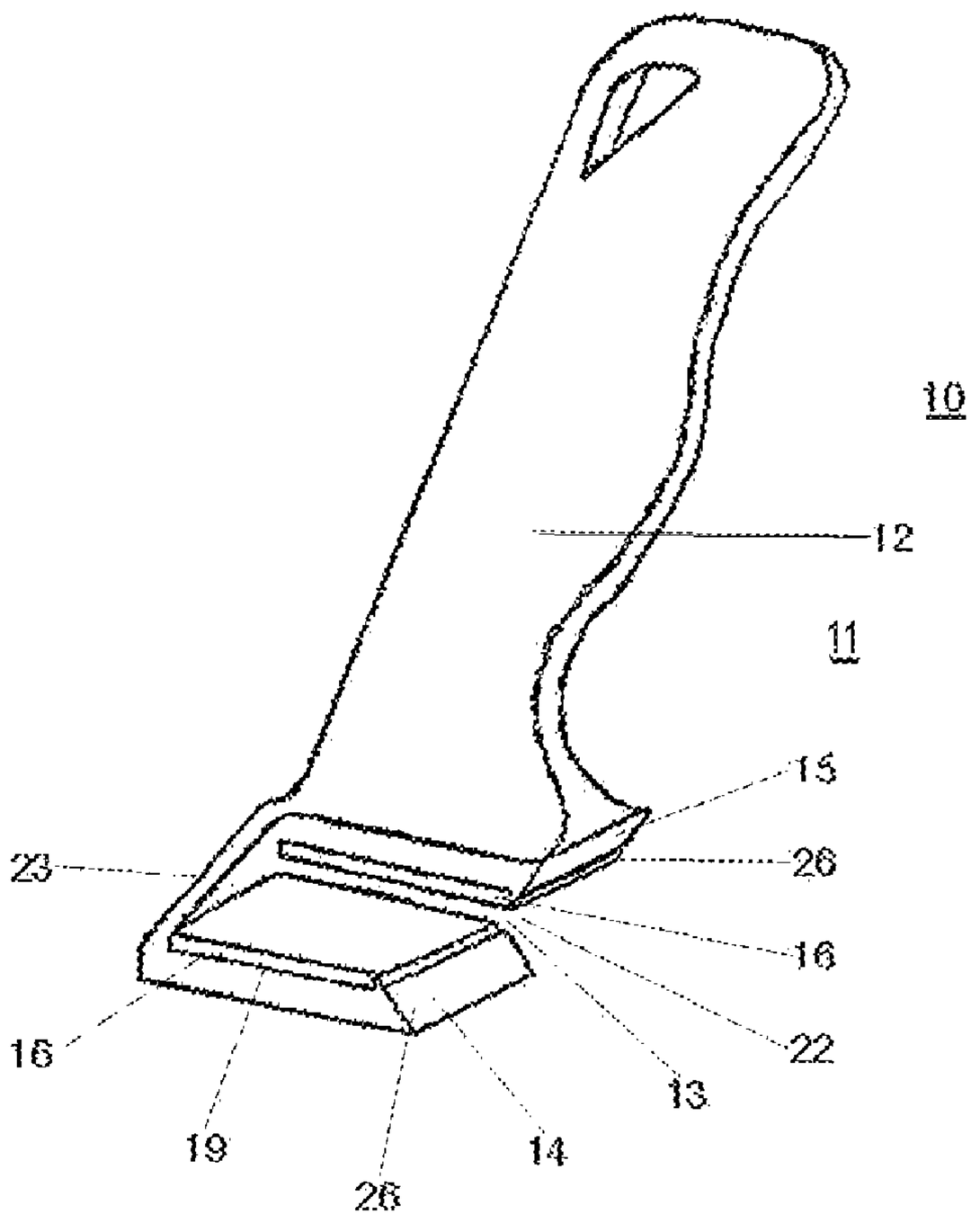
(57) **ABSTRACT**

A device to clean one or more strings, the string cleaning device comprising a body having a handle at one end of said body and a cleaning region for cleaning on the opposite end, wherein said cleaning region includes a pair of semi-rigid pad adapting portions and a cleaning pad fixably attached thereto wherein the pad adapting portions form a substantially U-shape so as to allow said stings to be moved through the opening formed by said U-shaped formation so as to slidably retain said strings between said cleaning pads attached to said pad adapting portions when the strings are being cleaned.

6 Claims, 4 Drawing Sheets



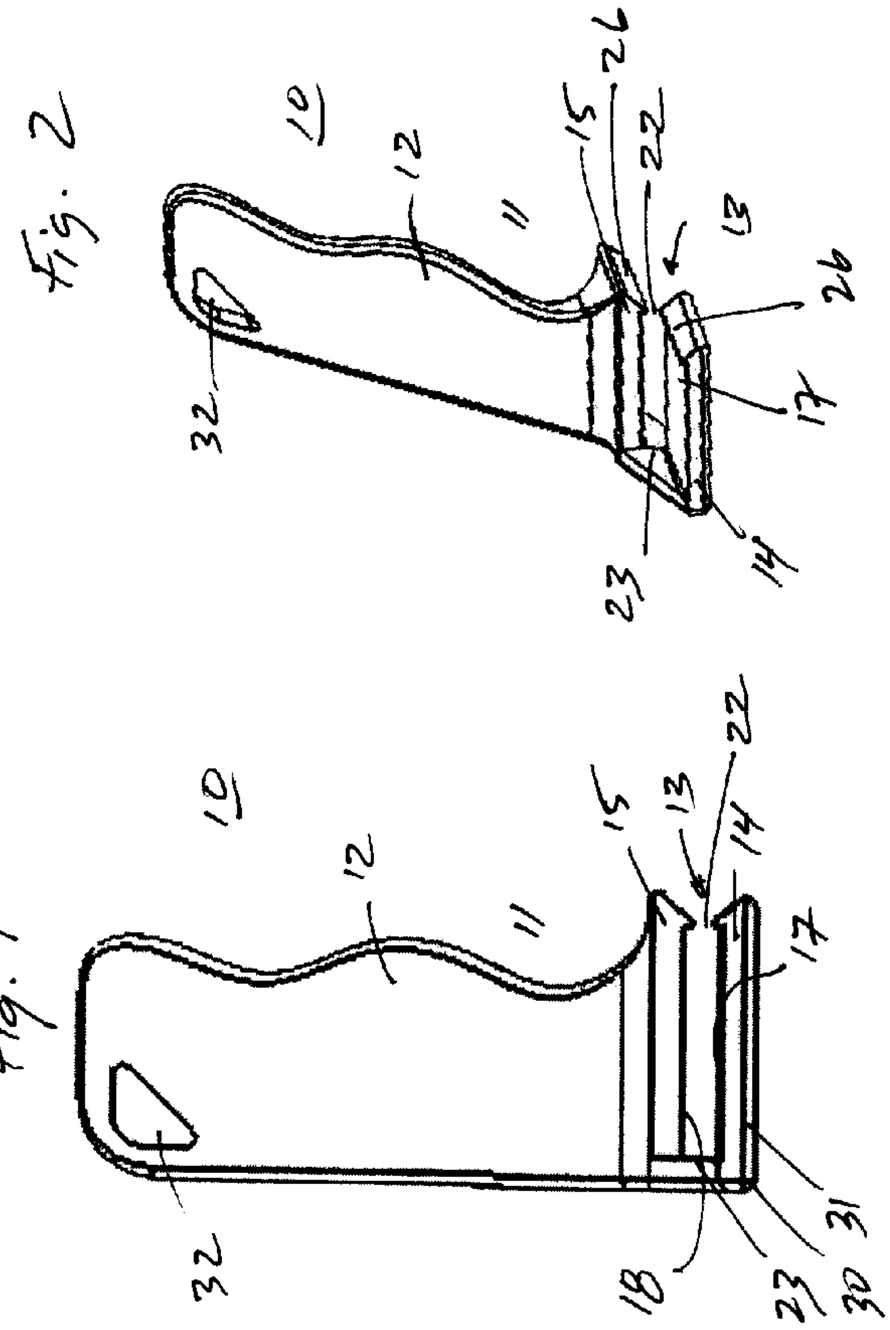


Fig. 2

Fig. 1

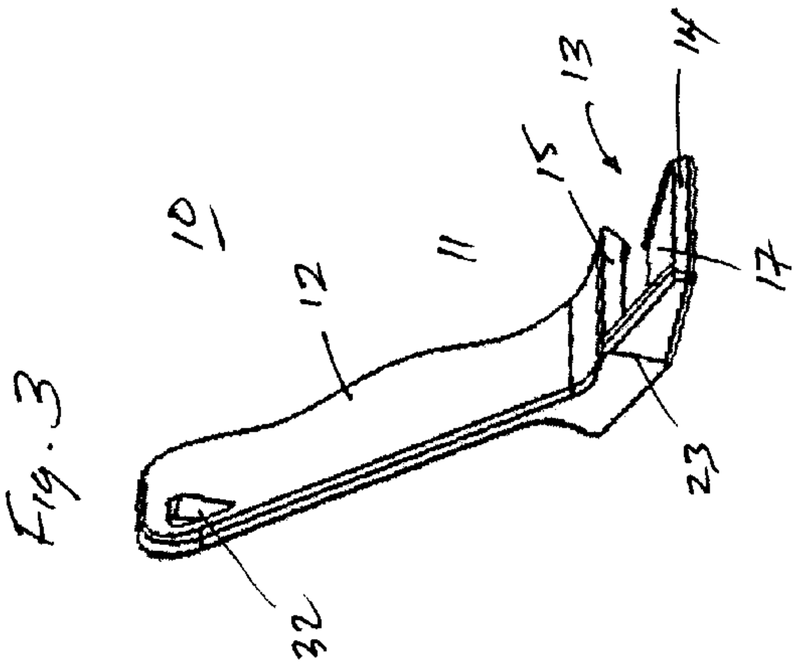


Fig. 3

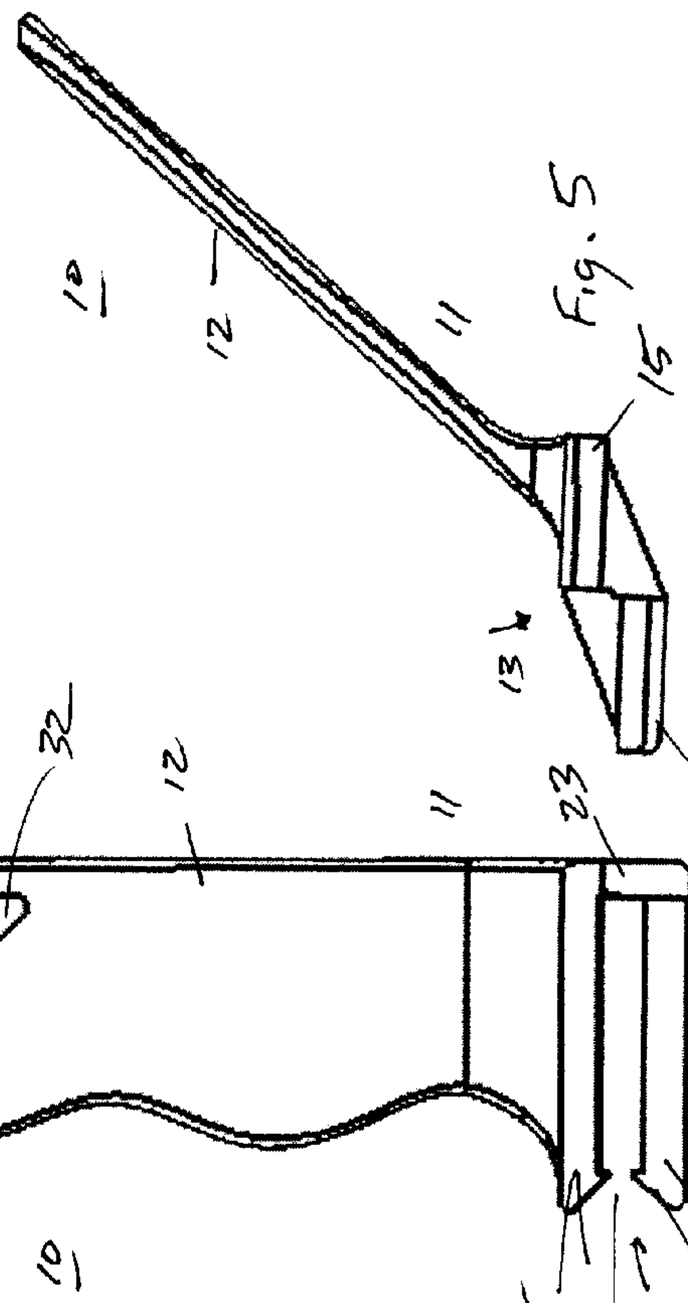


Fig. 5

Fig. 6

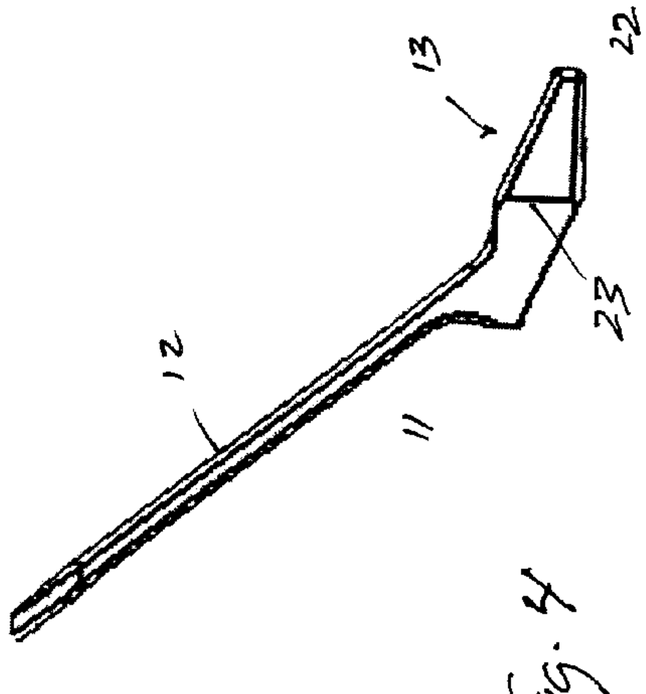


Fig. 4

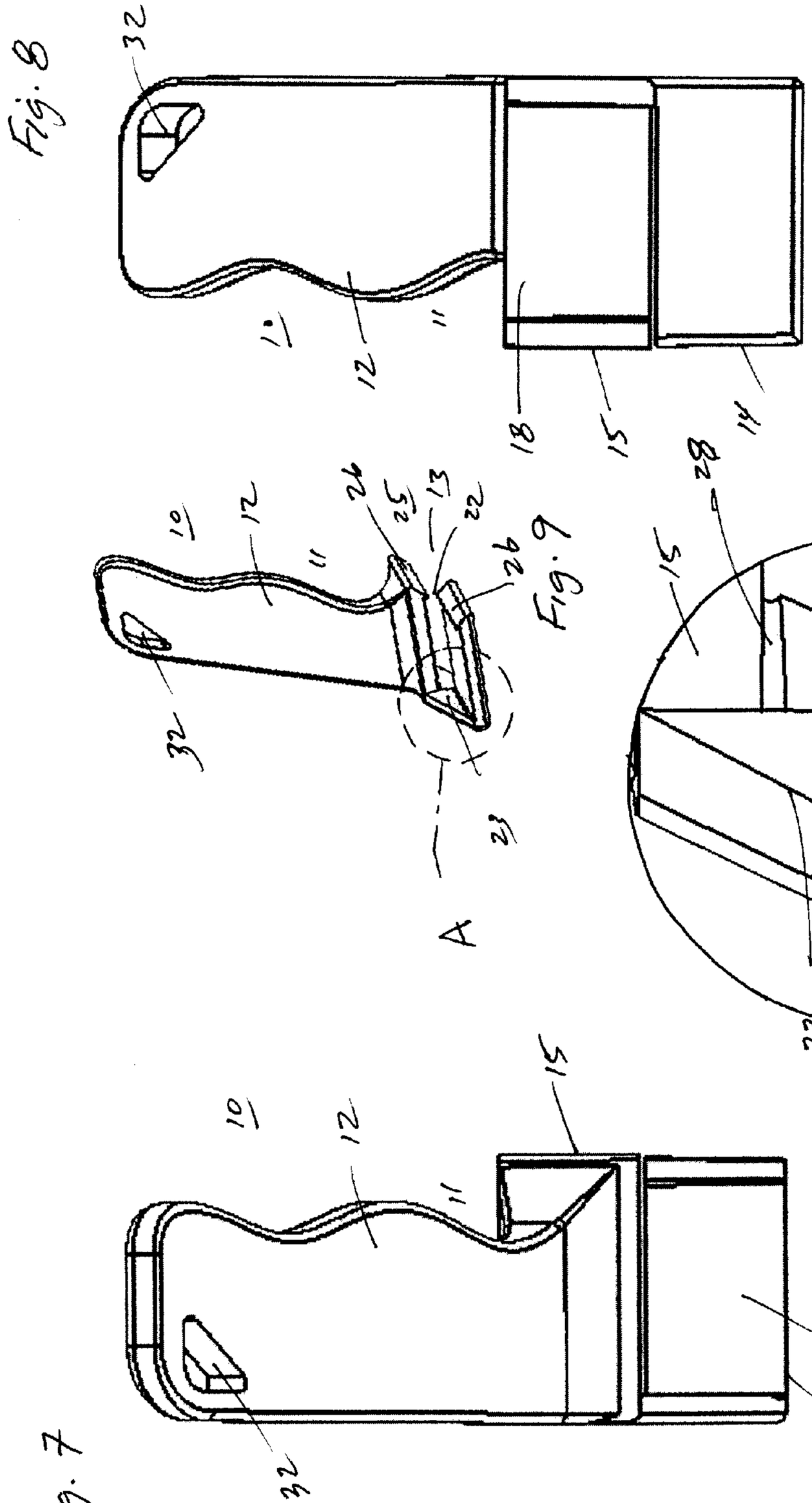


Fig. 8

Fig. 9

Fig. 7

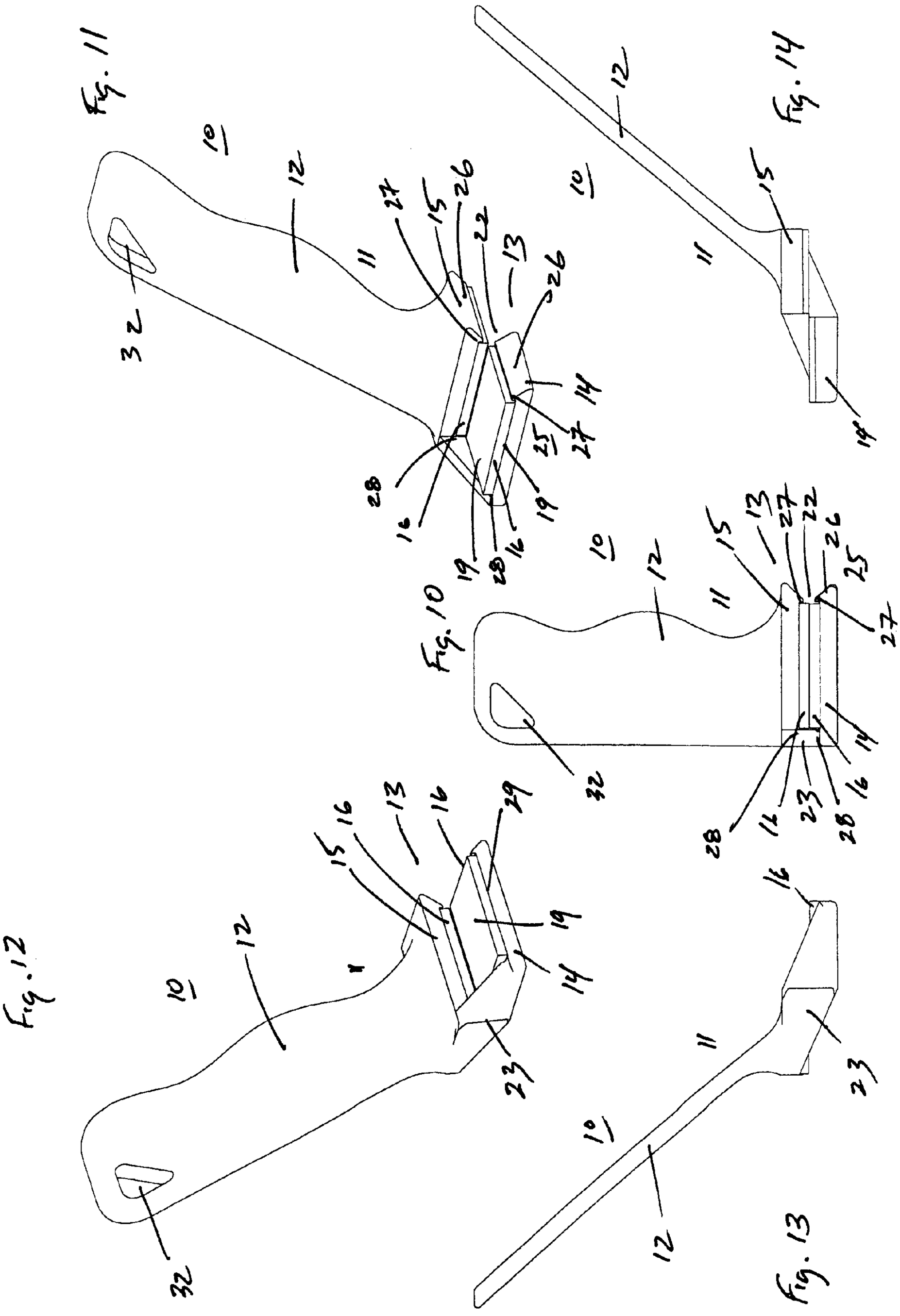


Fig. 11
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Fig. 14
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Fig. 10
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Fig. 12
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Fig. 13
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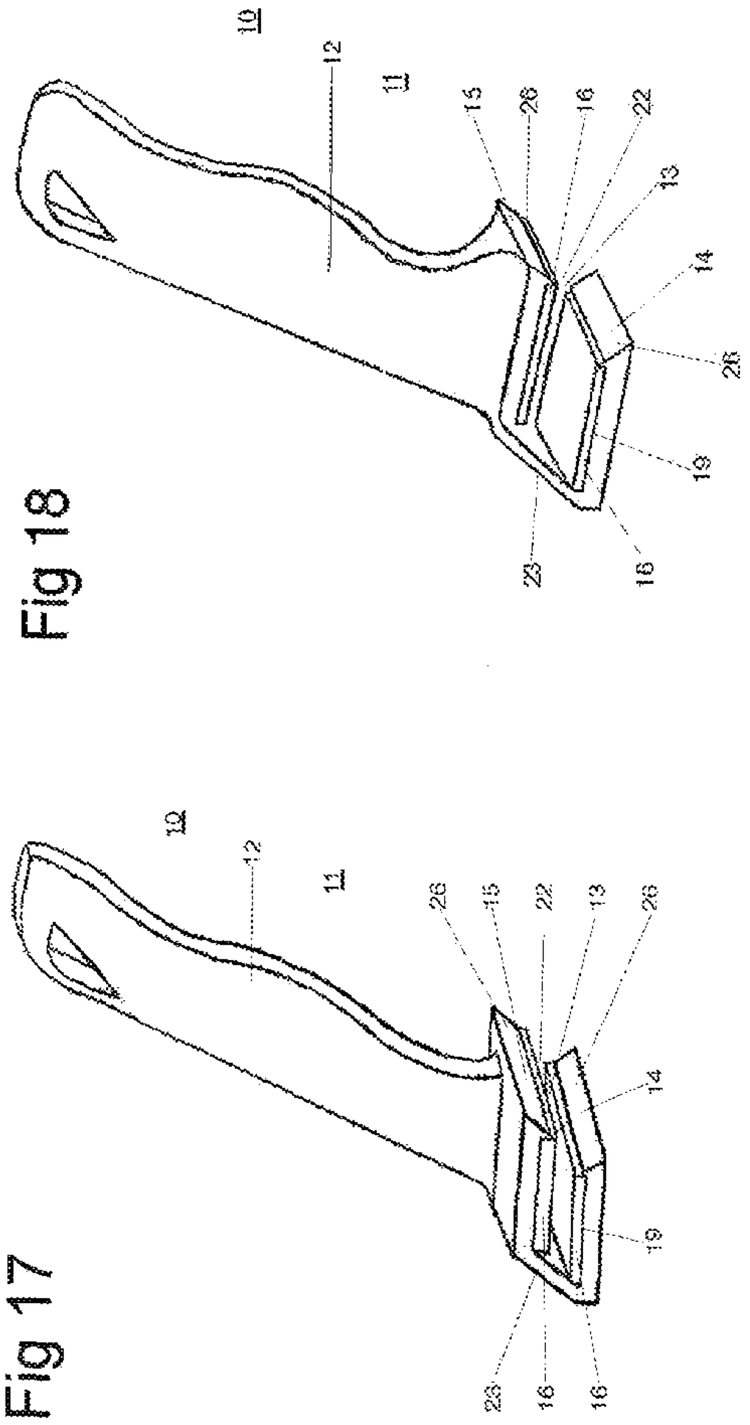

Fig 18

Fig 17

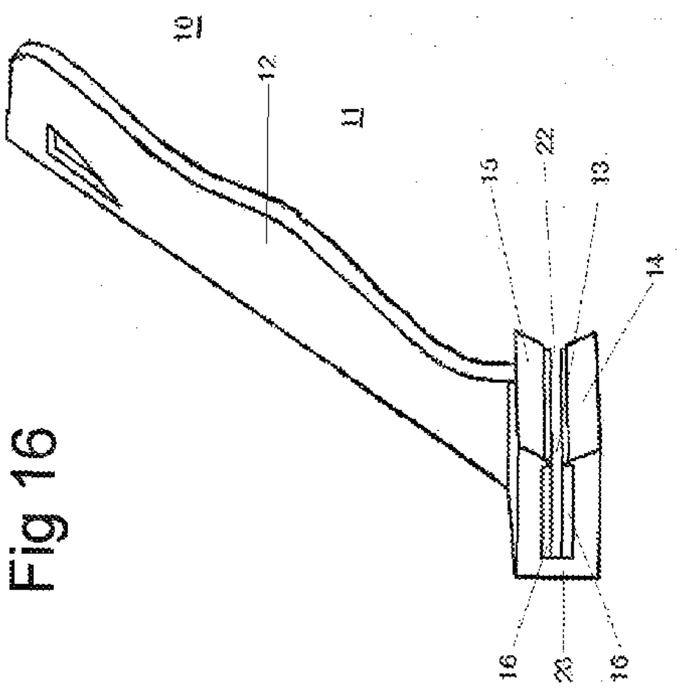

Fig 16

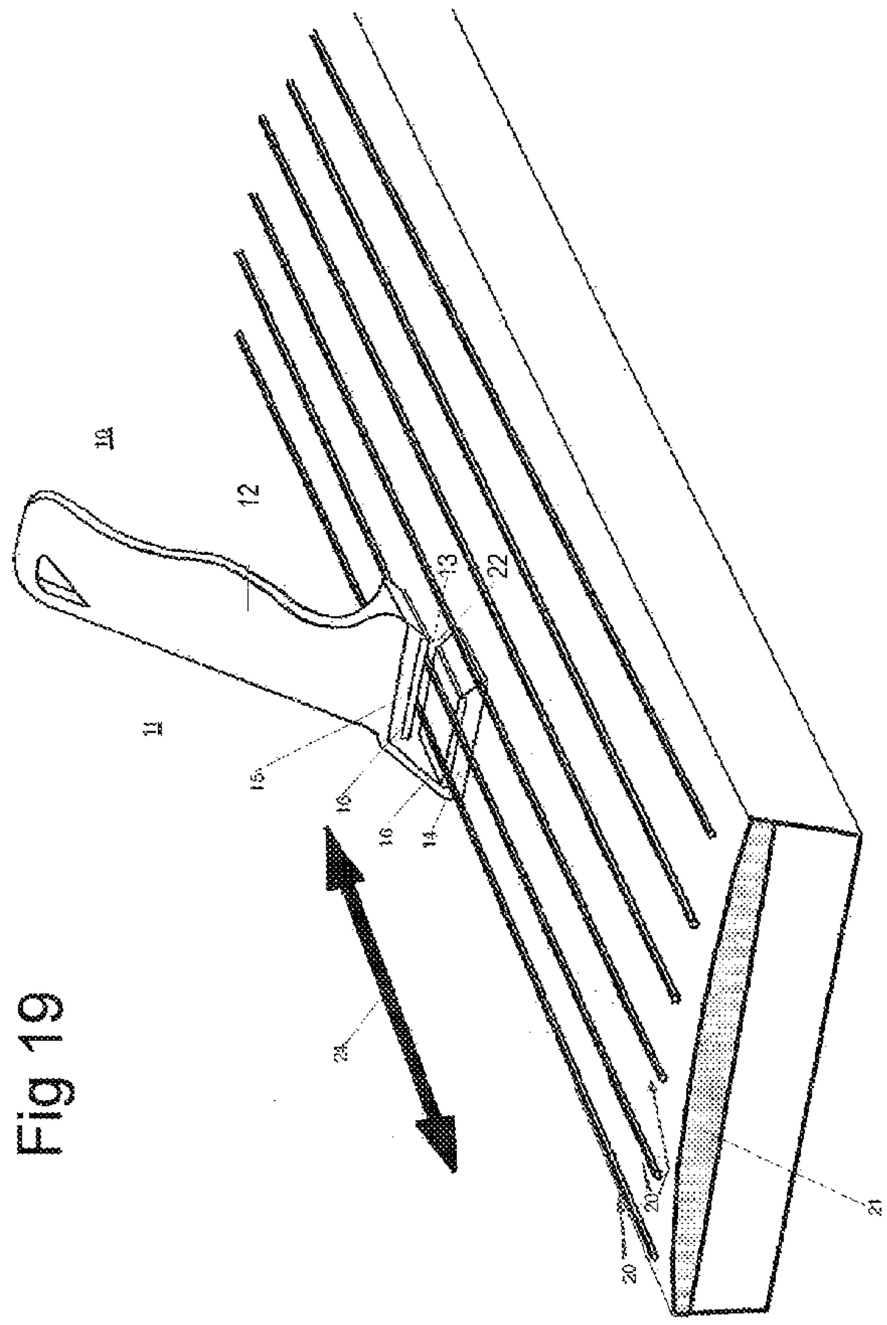

Fig 19

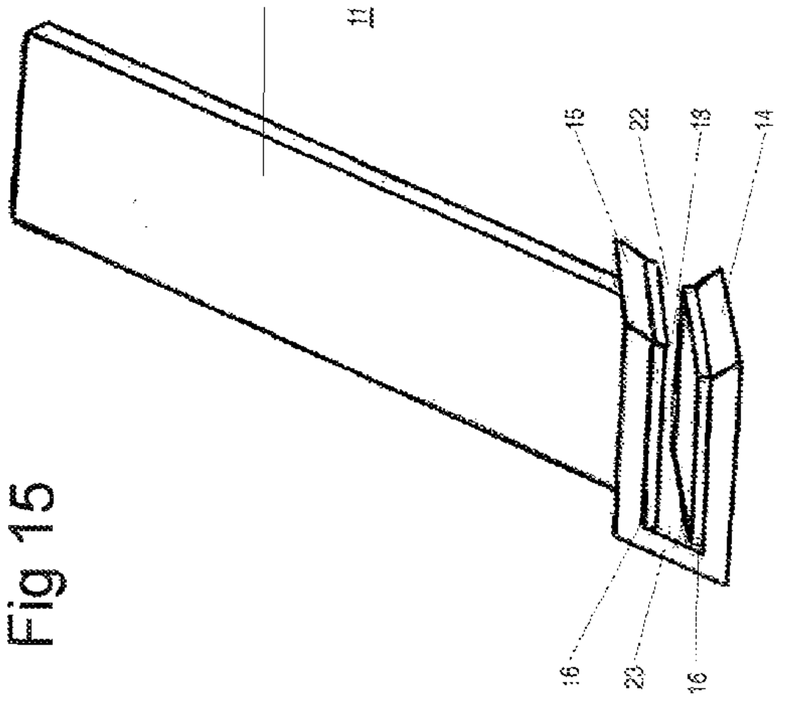

Fig 15

STRING CLEANING DEVICE AND METHOD

BACKGROUND OF INVENTION

This application relates generally to a string cleaning device and a method for cleaning strings. More specifically, this application relates to a string cleaning device usable for cleaning strings that are taught and/or secured at each end. More specifically, this application relates to a string cleaning device usable for cleaning stringed instruments.

This application relates to a string cleaner that gives a user means to maintain the condition of instrument strings located on any stringed instrument (acoustic guitar, electric guitar, mandolin, violin, viola, cello, banjo, dulcimer, etc.) without the use of solvents or cleaners, however, solvents or cleaners maybe used if desired by the user.

Instrument strings begin to tarnish and rust the moment they are removed from the packaging in which they are sold and come into contact with moisture in the air. This process is greatly accelerated by the moisture and acidity introduced when a user's fingers come in contact with the strings while playing the instrument. The amount of acidity and moisture varies from user to user and, so it stands to reason that, the rate of tarnish and rust will vary in direct proportion.

Tarnished, rusted, corroded, and otherwise dirty strings damage instruments and hinder the quality of tone produced by otherwise clean vibrating strings. Although tarnish, rust, corrosion, and/or dirt will eventually build-up on the entire surface of the strings, it begins, and is often worst, where it remains unseen between the fret board of the instrument and strings. In fact, the true condition of a string is unable to be discerned as the user's fingers actually polish the visible side of the strings. The build-up on the side of the string that directly faces the instrument, in the case of a guitar, the fret board, is coarse and abrasive. When magnified, the tarnish, rust, corrosion, and/or dirt looks like stalactites hanging in a cave. The presence of this t tarnish, rust, corrosion, and/or dirt has an effect similar to a serrated knife-edge.

In the case of a guitar or similar designed instrument, as a user frets notes on strings, they (the strings) come into contact with frets and the wood or graphite fret board. Tarnished, rusted, corroded, and/or dirty strings wear away at frets and fret boards at a much more aggressive rate than smooth clean strings do. The damage to frets and fret boards, although repairable, can be costly. For example, the actual cost to replace frets and/or a damaged fret board can often cost as much as the guitar itself; on boutique, vintage, and/or collectible instruments, the value of the instrument can be severely diminished by the repair work as it is no longer in original factory condition. Further, the tone of the instrument will change.

The tone of different brands of metal strings on an instrument varies from brand to brand, and, often drastically. The one thing these various brands of strings have in common is that they will all eventually tarnish, rust, and/or corrode with use and when this happens, the strings' characteristic vibration will change. The most noticeable change is the loss of brightness (high end or "sparkle") and diminished sustain (the amount of time that a string will "ring" or vibrate after it is played). As build-up occurs overtime, strings progressively sound more and more dull creating an inconsistency in the tone of the instrument. Clean strings sound consistent with clean strings of the same brand installed on the same instrument and clean string resist breakage. Whereas with tarnished, rusted, corroded and/or otherwise dirty strings, the build-up makes it difficult to measure and recreate consistently since the tone varies with the degree of build-up.

Therefore, there is a need for a string cleaning device that would be able to effectively clean instrument strings. It would also be desirable if the strings would be able to be cleaned without the use of solvents or cleaners. It would also be desirable if the strings did not have to be removed from the instrument in order to be cleaned. Further, it would be desirable if the device to clean instrument strings was small, convenient, and affordable to both manufacture and for a user to purchase.

SUMMARY

This application discloses a string cleaning device that is economical to produce, of simple construction and capable of mass production, but also capable of providing a user a suitable means to clean and maintain strings on any stringed instrument.

In particular, this application discloses a device to clean one or more strings, the string cleaning device comprising: a body having a handle at one end of said body and a cleaning region for cleaning one or more strings on the opposite end; wherein said cleaning region comprises a pair of semi-rigid pad adapting portions forming a substantially U-shape.

This application also discloses a device to clean one or more strings, the string cleaning device comprising: a body having a handle at one end of said body and a cleaning region for cleaning on the opposite end; wherein said cleaning region comprises a pair of semi-rigid pad adapting portions and a cleaning pad fixably attached thereto wherein the pad adapting portions form a substantially U-shape so as to allow said stings to be moved through the opening formed by said U-shaped formation so as to slidably retain said strings between said cleaning pads attached to said pad adapting portions when the strings are being cleaned.

Further, this application discloses a method of cleaning one or more stings, the method comprising: inserting a one or more strings between two cleaning pads fixably attached to a pair of semi-rigid pad adapting portions wherein the pad adapting portions and said cleaning pads form a cleaning region that is a substantially U-shaped so as to allow said string or stings to be inserted through the opening formed by said U-shaped cleaning region; retaining said strings between said cleaning pads; applying a force to said cleaning region though a handle attached to the cleaning region, thereby moving the cleaning region lengthwise across the strings.

In a further embodiment, this application discloses a method for indicating when a desired torque setting has been obtained and exceeded by providing a torque-indicating mechanism coupled to a click arm and housed within a tube casing and coupled to a torque-limiting mechanism, setting a torque-adjusting mechanism coupled to said torque-limiting mechanism, and applying a force to the fastener engaged wrench whereby the method is further characterized by orientating the driver correctly thereby allowing activation of the torque-indicating mechanism.

Further, this application discloses a musical instrument cleaning system comprising: a musical instrument with one or more strings; and a device to clean one or more musical instrument strings, the string cleaning device comprising a body having a handle at one end of said body and a cleaning region for cleaning on the opposite end, wherein said cleaning region comprises a pair of semi-rigid pad adapting portions and a cleaning pad fixably attached thereto wherein the pad adapting portions form a substantially U-shape so as to allow said stings to be moved through the opening formed by said U-shaped formation so as to slidably retain said strings

between said cleaning pads attached to said pad adapting portions when the strings are being cleaned.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings, when considered in connection with the following description, are presented for the purpose of facilitating an understanding of the subject matter sought to be protected.

FIG. **1** is front plan view of a string cleaning device;
FIG. **2** is a perspective view of the device in FIG. **1**;
FIG. **3** is a perspective view of the device in FIG. **1**;
FIG. **4** is a side plan view of the device in FIG. **1**;
FIG. **5** is a side plan view of the device in FIG. **1**;
FIG. **6** is a rear plan view of the device in FIG. **1**;
FIG. **7** is a top plan view of the device in FIG. **1**;
FIG. **8** is a bottom plan view of the device in FIG. **1**;
FIG. **9** is a perspective view similar to the view in FIG. **2**, showing a detail of the represented portion of the device;
FIG. **10** is front plan view of the preferred embodiment with the cleaning pad attached to the of the a string cleaning device in FIG. **1**;
FIG. **11** is a perspective view of the device in FIG. **10**;
FIG. **12** is a perspective view of the device in FIG. **10**;
FIG. **13** is a side plan view of the device in FIG. **10**;
FIG. **14** is a side plan view of the device in FIG. **10**;
FIG. **15** is a perspective view of a first embodiment of a string cleaning device;
FIG. **16** is a perspective view of a second embodiment of a string cleaning device;
FIG. **17** is a perspective view of a third embodiment of a string cleaning device;
FIG. **18** is a perspective view of a fourth embodiment and preferred embodiment of the string cleaning device in FIG. **10**; and,
FIG. **19** is a perspective view of the string cleaning device during use according to some embodiments.

DETAILED DESCRIPTION

Referring to FIGS. **1-14**, shown therein and generally designated by the reference character **10** is the preferred embodiment of the sting cleaning device **10** constructed in accordance with the following description. The device **10** comprises a body **11** that is preferably made out of a semi-rigid moldable material such as plastic, glass reinforced resin, ABS, and polystyrene. The body **11** includes a handle **12** and a cleaning region **13**. In the preferred embodiment, the cleaning region **13** is formed out of a pair of semi-rigid pad adapting portions **14** and **15**. As shown in FIGS. **1-14**, pad adapting portions **14** and **15** form a substantially U-shape with an open **22** and closed portion **23**. And as shown in FIGS. **10-14**, the device **10** includes a cleaning pad **16** fixably attached to the inner surfaces **17** and **18** of the pad adapting portions **14** and **15**. The cleaning pad **16** can be fixably attached to the inner surfaces **17** and **18** of the pad adapting portions **14** and **15** by any means known in the art, including but not limited to, an adhesive **29** applied to the back of the cleaning pad **16**.

The cleaning pad **16** is characterized by an adhesive surface **29** and an abrasive surface **19** such that when it is used in the device **10** it sufficiently removes any build-up on the stings being cleaned. Any such abrasive cleaning pad would be sufficient, however, the 3M product, Scotch-Brite® Surface Conditioning Hand Pad (Product No. 7447) is particularly preferred.

In the preferred embodiment, the pad adapting portions **14** and **15** are sufficiently offset such that neither pad adapting portions **14** and **15** is directly above or below the other. See FIGS. **7**, **8** and **14** which more clearly demonstrate this orientation. This particular offset orientation allows the user to generate a sufficient force through the handle **12** to the cleaning region **13** such that a minimal amount of pressure is required to clean a given string or set of strings **20**.

Referring to FIGS. **16-18**, the cleaning region **13** can have varying degrees of offset between the pad adapting portions **14** and **15**. For example in FIG. **16**, the pad adapting portions **14** and **15** are approximately above and below each other. FIG. **17** shows yet another embodiment wherein the pad adapting portions **14** and **15** are partially above and below each other. FIG. **18** again shows the preferred embodiment wherein the pad adapting portions **14** and **15** are sufficiently offset such that neither pad adapting portions **14** and **15** is directly above or below the other.

FIG. **19** shows the device **10** being used to clean one or more instrument stings **20** while still attached to the instrument. The portion of the instrument shown in FIG. **19** is of a fret board **21** located on a guitar; however, any similar portion of any stringed instrument could be used. Referring to FIG. **19**, the user inserts a one or more strings through the opening **22** formed by said U-shaped cleaning region **13** such that the string or strings sit between the between the pad adapting portions **14** and **15**, more specifically, the cleaning pads **16** attached to the inner surface **17** and **18** of the pad adapting portions **14** and **15**. Once the string or strings **20** are retained between the cleaning pads **16**, the user can apply a force to the cleaning region **13** through the handle **12** and move the cleaning region **13** in a lengthwise direction **24** across the strings to clean them.

The device **10** may also comprise means **25** for preventing a string or stings **20** from dislodging the cleaning pad or pads **16** from the pad adapting portions **14** and **15** when said device **10** is being used to clean a given string or strings **20**. The means **25** include ramped portions **26** on the pad adapting portions **14** and **15** located at the opening **22** of the U-shaped cleaning region **13**. The ramped portions **26** extend a length **27** up the side of the cleaning pad **16** such that when the user inserts a string **20** between the cleaning pads **16**, the string **20** is not able to get between the pad **16** and the pad adapting portions **14** and **15** to dislodge the pad **16**. See FIGS. **10** and **11**.

An additional means **25** for preventing a string or stings **20** from dislodging the cleaning pad or pads **16** from the pad adapting portions **14** and **15** when said device **10** is being used clean a given string or strings **20** is shown in FIG. **9**. The means **25** include grooves **28** on the pad adapting portions **14** and **15** located at the closed portion **23** of the U-shaped cleaning region **13**. The grooves **28** allow the adhesive portion **29** of the cleaning pad **10** to sit within the grooves **28** such that when the user inserts a string **20** between the cleaning pads **16**, the string **20** is not able to get between the pad **16** and the pad adapting portions **14** and **15** to dislodge the pad **16**.

It should be appreciated that means **25** could be applied to the device **10** either together, separately or not at all. See FIG. **15** for an example of the device **10** without either means **25** for preventing a string or stings **20** from dislodging the cleaning pad or pads **16** from the pad adapting portions **14** and **15** when said device **10** is being used clean a given string or strings **20**.

In yet a further embodiment of the device **10**, the outer surface **30** of the lower pad adapting portion **14** includes rounded edges **31** such that when the device **10** is used to clean a string or stings **20**, the rounded edge **31** allows the device **10** to glide across the instrument while avoiding any protrusions on the instrument's surface, for example the frets (not shown) located on a guitar's fret board **21**. See FIG. **9**.

In still a further embodiment of the device **10**, the handle **12** may include an opening **32** to allow the user to attach the device **10** to a key chain (not shown). See FIG. **1**.

While the present disclosure has been described in connection with what is considered the most practical and preferred embodiment, it is understood that this disclosure is not limited to the disclosed embodiments, but is intended to cover various arrangements included within the spirit and scope of the broadest interpretation so as to encompass all such modifications and equivalent arrangements.

What is claimed is:

1. A device to clean one or more strings, the string cleaning device comprising:

a body having a handle at one end of said body and a cleaning region for cleaning one or more strings on the opposite end;

wherein said cleaning region comprises a pair of semi-rigid pad adapting portions forming a substantially U-shape, wherein said pad adapting portions are approximately not above or below the other.

2. The string cleaning device of claim **1** wherein said pad adapting portions further comprise means for preventing a string from dislodging a cleaning pad when said pad is attached to said pad adapting portions.

3. A device to clean one or more strings, the string cleaning device comprising:

a body having a handle at one end of said body and a cleaning region for cleaning on the opposite end;

wherein said cleaning region comprises a pair of semi-rigid pad adapting portions and a cleaning pad fixably attached thereto wherein the pad adapting portions form

a substantially U-shape so as to allow said stings to be moved through the opening formed by said U-shaped formation so as to slidably retain said strings between said cleaning pads attached to said pad adapting portions when the strings are being cleaned, wherein said pad adapting portions are approximately not above or below the other.

4. The string cleaning device of claim **3** wherein said pad adapting portions further comprise means for preventing a string from dislodging said cleaning pad from said pad adapting portions.

5. A method of cleaning one or more stings, the method comprising:

inserting a one or more strings between two cleaning pads fixably attached to a pair of semi-rigid pad adapting portions wherein the pad adapting portions and said cleaning pads form a cleaning region that is a substantially U-shaped so as to allow said string or stings to be inserted through the opening formed by said U-shaped cleaning region;

retaining said strings between said cleaning pads;

applying a force to said cleaning region though a handle attached to the cleaning region, thereby moving the cleaning region lengthwise across the strings, wherein said pad adapting portions are approximately not above or below the other.

6. The method of claim **5** wherein said pad adapting portions further comprise means for preventing a string from dislodging said cleaning pad from said pad adapting portions.

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